

# PythonNumPy

September 8, 2025

```
[1]: import numpy as np
```

```
[2]: # Creating a rank 1 Array
arr = np.array([1, 2, 3])
print(arr)

# Creating a rank 2 Array
arr = np.array([[1, 2, 3],
                [4, 5, 6]])
print(arr)

# Creating an array from tuple
arr = np.array((1, 3, 2))
print(arr)
```

```
[1 2 3]
[[1 2 3]
 [4 5 6]]
[1 3 2]
```

```
[3]: arr = np.array([[-1, 2, 0, 4],
                    [4, -0.5, 6, 0],
                    [2.6, 0, 7, 8],
                    [3, -7, 4, 2.0]])

# Printing a range of Array
# with the use of slicing method
arr2 = arr[:2, ::2]
print ("first 2 rows and alternate columns(0 and 2):\n", arr2)

# Printing elements at
# specific Indices
arr3 = arr[[1, 1, 0, 3],
           [3, 2, 1, 0]]
print ("\nElements at indices (1, 3), "
        "(1, 2), (0, 1), (3, 0):\n", arr3)
```

```
first 2 rows and alternate columns(0 and 2):
[[-1.  0.]
```

```
[ 4.  6.]
```

Elements at indices (1, 3), (1, 2), (0, 1), (3, 0):

```
[0.  6.  2.  3.]
```

```
[4]: # Defining Array 1
a = np.array([[1, 2],
              [3, 4]])

# Defining Array 2
b = np.array([[4, 3],
              [2, 1]])

# Adding 1 to every element
print ("Adding 1 to every element:", a + 1)

# Subtracting 2 from each element
print ("\nSubtracting 2 from each element:", b - 2)

# sum of array elements
# Performing Unary operations
print ("\nSum of all array elements: ", a.sum())

# Adding two arrays
# Performing Binary operations
print ("\nArray sum:\n", a + b)
```

```
Adding 1 to every element: [[2 3]
 [4 5]]
```

```
Subtracting 2 from each element: [[ 2  1]
 [ 0 -1]]
```

```
Sum of all array elements:  10
```

```
Array sum:
```

```
[[5 5]
```

```
[5 5]]
```

```
[5]: # Integer datatype
x = np.array([1, 2])
print(x.dtype)

# Float datatype
x = np.array([1.0, 2.0])
print(x.dtype)

# Forced Datatype
```

```
x = np.array([1, 2], dtype = np.int64)
print(x.dtype)
```

```
int64
float64
int64
```

```
[6]: # First Array
arr1 = np.array([[4, 7], [2, 6]],
                 dtype = np.float64)

# Second Array
arr2 = np.array([[3, 6], [2, 8]],
                 dtype = np.float64)

# Addition of two Arrays
Sum = np.add(arr1, arr2)
print(Sum)

# Addition of all Array elements
Sum1 = np.sum(arr1)
print(Sum1)

# Square root of Array
Sqrt = np.sqrt(arr1)
print(Sqrt)

# Transpose of Array
Trans_arr = arr1.T
print(Trans_arr)
```

```
[[ 7. 13.]
 [ 4. 14.]]
19.0
[[2.          2.64575131]
 [1.41421356  2.44948974]]
[[4. 2.]
 [7. 6.]]
```

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[ ]:
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